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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/801,894	03/16/2004	Jinbao Jiao	IS01422AP	3385

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SCHAUMBURG, IL 60196

EXAMINER
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NGUYEN, KHIEM D

ART UNIT	PAPER NUMBER
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2823

DATE MAILED: 11/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/801,894

Applicant(s)

JIAO ET AL.

Examiner

Khiem D. Nguyen

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2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 15-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 03/16/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election of Group I (claims 1-14) in the reply filed on June 28<sup>th</sup>, 2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### *Oath/Declaration*

2. The oath/declaration filed on March 16<sup>th</sup>, 2004 is acceptable.

### *Information Disclosure Statement*

3. The Information Disclosure Statement filed on March 16<sup>th</sup>, 2004 has been considered.

### *Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

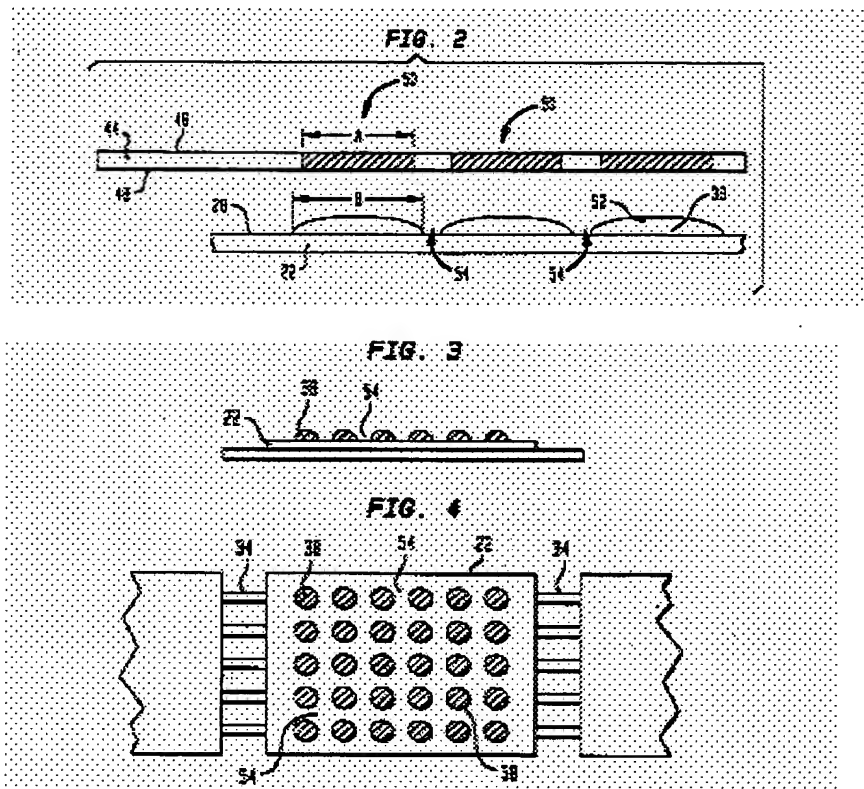
5. Claims 1-4 and 6-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Raab et al. (U.S. Patent 5,915,170).

In re claim 1, **Raab** discloses a method for applying adhesive for securing a printed circuit board to a substrate, the method comprising steps of: providing a first printing tool 44 with a first plurality of apertures 50 defined therethrough (col. 7, lines 48-63 and FIG. 2);

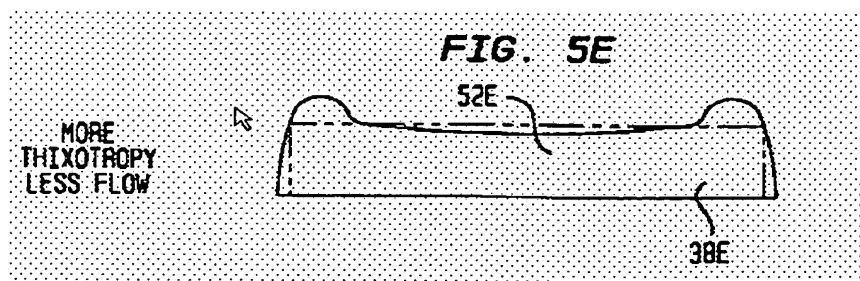
placing the first printing tool 44 upon a surface 28 of at least one of the printed circuit board 20 and the substrate 22 (col. 7, lines 60-63); printing a first liquid adhesive 38 onto the

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surface through the first printing tool 44, the first liquid adhesive 38 forming islands of adhesive within each aperture 50 (col. 8, lines 5-12 and FIGS. 3-4);



removing the first printing tool 44 perpendicularly from the surface 28 (col. 8, lines 12-15) such that the first printing tool deforms edges of the islands of the first adhesive 38E to form a raised edge above an exposed major face of the adhesive at a periphery of an island (FIG. 5E); and

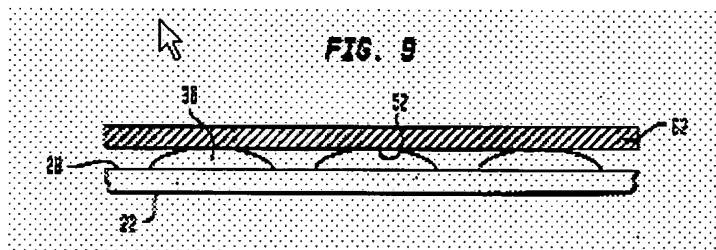


curing the first liquid adhesive (col. 8, lines 21-29).

In re claim 2, as applied to claim 1 above, Raab discloses all claimed limitations including the limitation wherein the first liquid adhesive 38 is a silicone-based adhesive (col. 7, line 53).

In re claim 3, as applied to claim 1 above, Raab discloses all claimed limitations including the limitation wherein the step of curing the first liquid adhesive 38 produces a tacky adhesive that slumps a negligible amount such that the raised edge is maintained above the exposed major face of the adhesive islands (col. 8, lines 21-29).

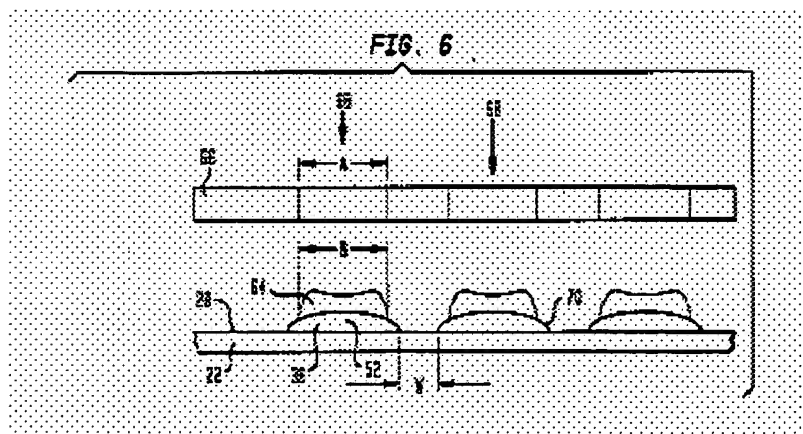
In re claim 4, as applied to claim 1 above, Raab discloses all claimed limitations including the limitation wherein the method further comprising the steps of: placing a liner 62 on top of the first adhesive 38, such that the liner 62 contacts the raised edge of a plurality of islands; and removing the liner 52 before laminating the printed circuit board 20 to the substrate 22 (col. 9, lines 42-59 and FIG. 9).



In re claim 6, as applied to claim 1 above, Raab discloses all claimed limitations including the limitation wherein the providing step includes providing the first printing tool 44 with connecting portions around the apertures 50 such that the islands 38 formed in the removing step have connecting open pathways 54 defined therebetween to allow outgassing to an outside environment from between a laminated assembly of the printed circuit board 20 and the substrate 22 (col. 8, lines 30-44 and FIG. 2).

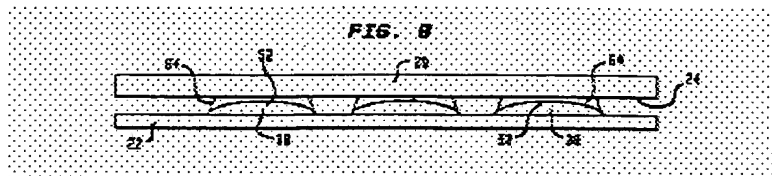
In re claim 7, as applied to claim 1 above, **Raab** discloses all claimed limitations including the limitation wherein the providing step includes providing the first printing tool 44 with straight connecting portions surrounding rectangular apertures 50 such that the islands formed in the removing step are aligned in a regular array having straight connecting pathways 54 defined therebetween (col. 8, lines 30-44 and FIG. 2).

In re claim 8, as applied to claim 1 above, **Raab** discloses all claimed limitations including the limitation wherein the method further comprising the steps of: providing a second printing tool 66 with a second plurality of apertures 68 defined therethrough; placing the second printing tool 66 upon the surface 28; printing a second thermally conductive liquid adhesive 64 onto the surface through the second printing tool 66, the second liquid adhesive forming second islands 64 of thermally conductive liquid adhesive within each aperture 68; removing the second printing tool 66 from the surface 28; and partially curing the second liquid adhesive 64 (col. 10, lines 9-45 and FIG. 6).



In re claim 9, as applied to claim 1 above, **Raab** discloses all claimed limitations including the limitation wherein the method further comprising the step of laminating the printed circuit board 20 to the substrate 22 with the cured adhesive 38/64 therebetween to

deform any raised edges on the islands to be coplanar with the major face of the adhesive islands (col. 10, lines 46-66 and FIG. 8).



### *Claim Rejections - 35 USC § 103*

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Raab et al. (U.S. Patent 5,915,170).

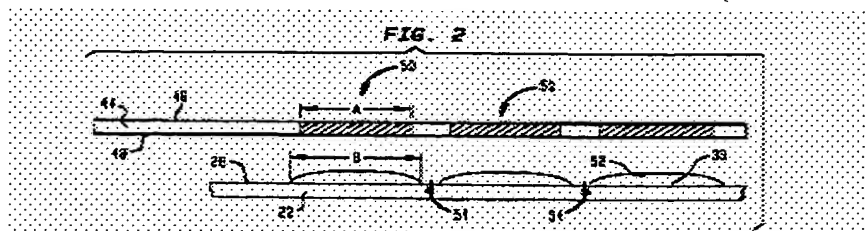
In re claim 5, as applied to claim 1 Paragraph 5 above, **Raab** discloses all the claimed limitations including the step providing a first printing tool 44 with a first plurality of apertures 50 having a rectangular shape defined therethrough (FIG. 50) and printing a liquid adhesive 38 onto the surface 28 through the first printing tool 44 to form islands 38 within each aperture 50 and removing the first printing tool 44 perpendicularly from the surface 28 such that the first printing tool 44 deforms edges of the islands 38 of the first adhesive 38 to form a raised edge above an exposed major face of the adhesive at a periphery of an island (FIG. 5E) but does not explicitly teach or suggest wherein the top of at least one aperture has a larger area than a bottom of the at least one aperture.

However, there is no evidence indicating the shape of the aperture of the printing tool is critical and it has been held that it is not inventive to discover the optimum or workable shape of a result-effective variable within given prior art conditions by routine experimentation. See MPEP § 2144.04. In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) (The court held that the configuration of the claimed disposable plastic nursing container was a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to configure the shape of the aperture of the printing tool of Raab to have a top area larger than a bottom area so that the smaller bottom area inherently pulls adhesive material upwardly to form a raised edge because the same materials are being treated in the same manner would obtain the same recited result.

8. Claims 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raab et al. (U.S. Patent 5,915,170).

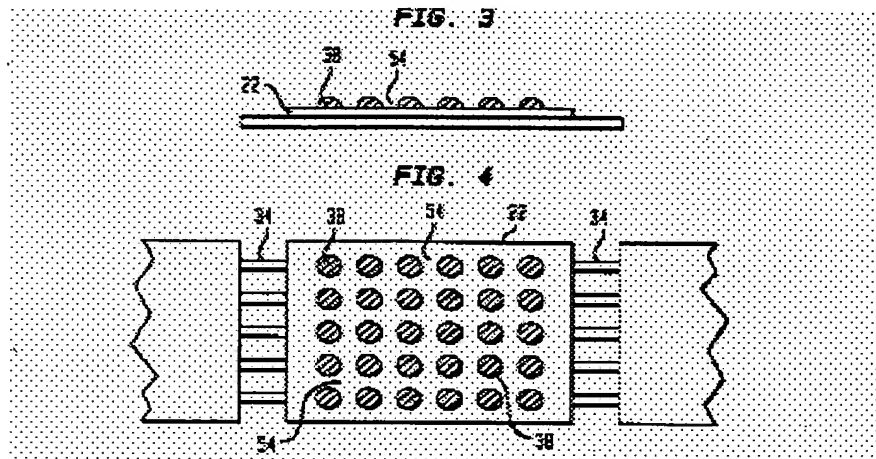
In re claim 10, **Raab** discloses a method for applying adhesive for securing a printed circuit board to a substrate, the method comprising steps of: providing a first printing tool 44 with a first plurality of apertures 50 defined therethrough, wherein the apertures 50 having a rectangular shape (col. 7, lines 48-63 and FIG. 2);



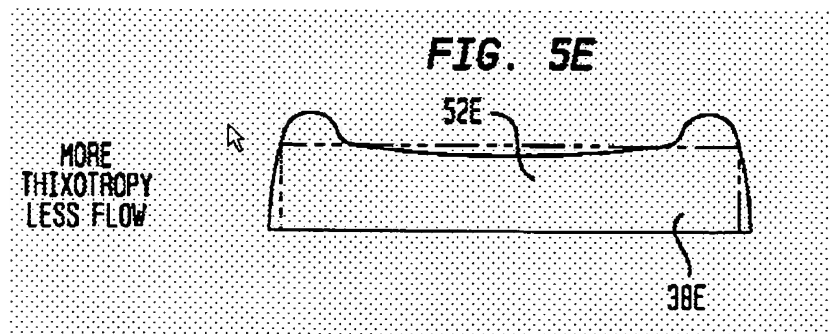


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placing the first printing tool 44 upon a surface 28 of at least one of the printed circuit board 20 and the substrate 22 (col. 7, lines 60-63); printing a first liquid adhesive 38 onto the surface 28 through the first printing tool 44, the first liquid adhesive 38 forming islands of adhesive within each aperture 50 (col. 8, lines 5-12 and FIGS. 3-4);



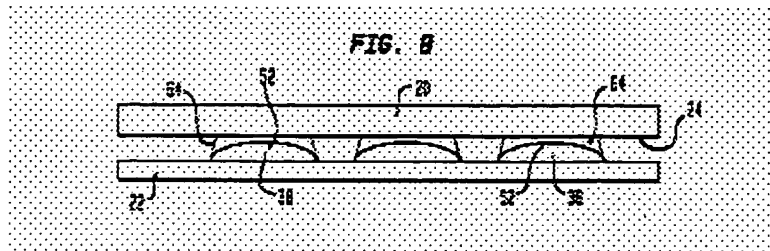
removing the first printing tool 44 perpendicularly from the surface 28 (col. 8, lines 12-15) such that the smaller area of the bottom of the at least one aperture pulls adhesive material 38E upwardly to form a raised edge above an exposed major face of the adhesive around only a portion of a periphery of an island (FIG. 5E);



curing the first liquid adhesive 38 to produce a tacky adhesive that slumps a negligible amount such that the raised edge is maintained above the exposed major face of the adhesive islands (col. 8, lines 21-29); and laminating the printed circuit board 20 to

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the substrate 22 with the cured adhesive 38 therebetween to deform any raised edges on the islands to be coplanar with the major face of the adhesive islands (col. 10, lines 46-66 and FIG. 8).



**Raab** discloses all the claimed limitations including the step providing a first printing tool 44 with a first plurality of apertures 50 having a rectangular shape defined therethrough (FIG. 50) and printing a liquid adhesive 38 onto the surface 28 through the first printing tool 44 to form islands 38 within each aperture 50 and removing the first printing tool 44 perpendicularly from the surface 28 such that the first printing tool 44 deforms edges of the islands 38 of the first adhesive 38 to form a raised edge above an exposed major face of the adhesive at a periphery of an island (FIG. 5E) but does not explicitly teach or suggest wherein the top of at least one aperture has a larger area than a bottom of the at least one aperture as recited in independent claim 10, lines 3-4.

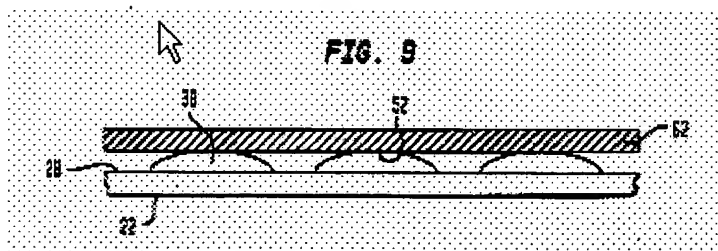
However, there is no evidence indicating the shape of the aperture of the printing tool is critical and it has been held that it is not inventive to discover the optimum or workable shape of a result-effective variable within given prior art conditions by routine experimentation. See MPEP § 2144.04. In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) (The court held that the configuration of the claimed disposable plastic nursing container was a matter of choice which a person of ordinary skill in the art would

have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to configure the shape of the aperture of the printing tool of Raab to have a top area larger than a bottom area so that the smaller bottom area inherently pulls adhesive material upwardly to form a raised edge because the same materials are being treated in the same manner would obtain the same recited result.

In re claim 11, as applied to claim 10 above, **Raab** discloses all claimed limitations including the limitation wherein the first liquid adhesive 38 is a silicone-based adhesive (col. 7, line 53).

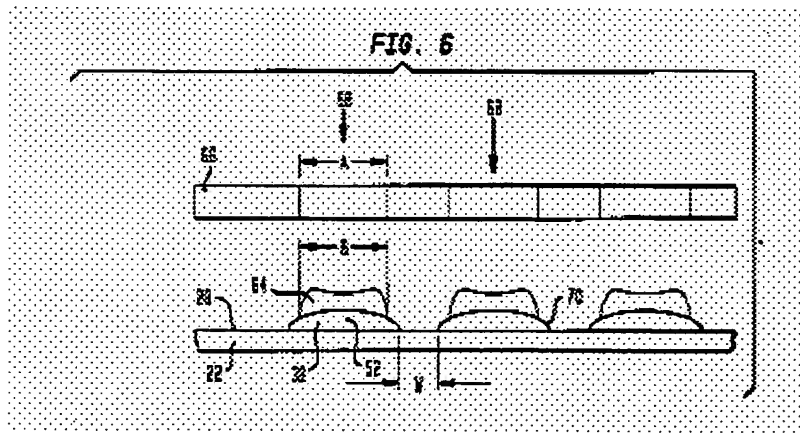
In re claim 12, as applied to claim 10 above, **Raab** discloses all claimed limitations including the limitation wherein the method further comprising the steps of: placing a liner 62 on top of the first adhesive 38, such that the liner 62 contacts the raised edge of a plurality of islands 38; and removing the liner 62 before laminating the printed circuit board 20 to the substrate 22 (col. 9, lines 42-59 and FIG. 9).



In re claim 13, as applied to claim 10 above, **Raab** discloses all claimed limitations including the limitation wherein the providing step includes providing the first printing tool 44 with connecting portions around the apertures 50 such that the islands

formed in the removing step have connecting open pathways 54 defined therebetween to allow outgassing to an outside environment from between a laminated assembly of the printed circuit board 20 and the substrate 22 (col. 8, lines 30-44 and FIG. 2).

In re claim 14, as applied to claim 10 above, **Raab** discloses all claimed limitations including the limitation wherein the method further comprising the steps of: providing a second printing tool 66 with a second plurality of apertures 68 defined therethrough; placing the second printing tool 66 upon the surface 28; printing a second thermally conductive liquid adhesive 64 onto the surface through the second printing tool 66, the second liquid adhesive 64 forming second islands of thermally conductive liquid adhesive within each aperture 68; removing the second printing tool 66 from the surface 28; and partially curing the second liquid adhesive (col. 10, lines 9-45 and FIG. 6).



### *Conclusion*

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khiem D. Nguyen whose telephone number is (571) 272-1865. The examiner can normally be reached on Monday-Friday (8:30 AM - 5:30 PM).

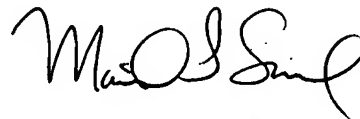
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

K.N.

November 09, 2006

A handwritten signature in black ink, appearing to read "Matthew Smith", is positioned above the printed name and title.

MATTHEW SMITH  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800